RESEARCH PAPER

# Impact of Knowledge Management on Organizational Sustainability in Faculties of Physical Therapy in Egypt: Cross-Sectional Study

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***Abstract***

Background: Universities learn, change, and sustain thanks to knowledge management. Physical therapy faculties in Egypt have grown rapidly, but not much is known about how their knowledge management practices help in their organizational sustainability. Methods: This cross-sectional study examined the influence of four knowledge management dimensions—generation and development, codification, sharing, and utilization—on organizational sustainability within 37 active faculties of physical therapy. A total of 301 academics from various ranks participated in a validated online questionnaire. Descriptive statistics, multiple linear regression, and Pearson correlations were performed. Results: Overall, respondents reported moderately high levels of knowledge management and sustainability. The regression model elucidated 75.3% of the variance in organizational sustainability, identifying knowledge utilization and knowledge codification as the predominant predictors, while knowledge generation and development also contributed significantly. However, knowledge sharing did not significantly forecast sustainability. A positive strong relationship was found between all four dimensions and organizational sustainability. Conclusion: These findings emphasize that universities enhance their sustainability by systematically generating, organizing, and applying knowledge in routine academic activities. Egyptian physical therapy faculties must strengthen knowledge management to remain competitive and contribute to national and global development goals.

***Keywords—Knowledge management, Organizational sustainability, physical therapy, higher education***

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## I. INTRODUCTION

In 2015, the UN declared the Sustainable Development Goals (SDGs) and all its members committed to achieving them by 2030. The seventeen goals focus on the prosperity of the present, with no compromise of the future [1]. The sustainability goals can be divided into four main pillars of sustainability: human, social, economic, and environmental [2], [3].

Organizational sustainability is the organizational potential to survive and prosper by reaching a balance between economic viability, social responsibility, and environmental stewardship to ensure meeting the needs of the present without compromising the future[4]. From that definition, we can clearly conclude that organizational sustainability results from the summation of all sustainability pillars.

Egypt is known as a leader in physical therapy in the Middle East. Cairo University's Faculty of Physical Therapy was the first and, for many years, the only faculty of physical therapy in Egypt. The growth of physical therapy education started in the 1990s with the opening of two private faculties. This showed that more people were recognizing the importance of the field [5], [6]. The Egyptian government has approved the creation of new physical therapy faculties to meet growing demand and improve healthcare services. This aligns with Egypt Vision 2030 and the United Nations SDGs[5]. The profession currently faces challenges, including the

need for improved evidence-based practice and the broader adoption of new rehabilitation methods [5], [6].

By 2025, Egypt had opened 41 new physical therapy faculties across governmental, national, international, and private universities. This has made research and education more competitive. These faculties need to ensure that they can remain competitive at both the domestic and global levels to survive and thrive [7], [8]. Practical sustainability in higher education encompasses systemic thinking, the creation of new ideas, long-term planning, and complexity management. However, institutions often lack the interest, knowledge, or resources to do so. To maintain sustainability, institutions need to be committed; the curriculum needs to be continuously developed; funding for education on sustainable development needs to be allocated; and partnerships with external groups need to be encouraged to strengthen and legitimize the organization [9], [10]. To make sustainability part of university life and ensure that organizations are genuine, it is essential to employ a wide range of strategies, including enhancing knowledge management (KM) within organizations.

The KM refers to an organized approach of generating, codifying, disseminating, and integrating knowledge inside the organizations in order to improve performance, boost innovation, and achieve competitive advantage[11], [12]

Knowledge management can be defined as the process of managing both explicit (recorded information) and tacit (personal know-how) knowledge so that the organization's important ideas and skills are available and can be used effectively. KM improves learning in organizations by encouraging teamwork, making decisions better, and making it easier to keep getting better by managing knowledge assets [11], [12]

The KM consists of four main dimensions (Fig 1). The first dimension, Knowledge Generation and Development, pertains to the creation, generation, and acquisition of new knowledge via both explicit and tacit knowledge. This dimension displays the significance of developing new insights and building expertise that can drive organizational growth [12], [13]. The second dimension, Knowledge Codification, pertains to the systematic documentation of knowledge, facilitating its efficient storage, retrieval, and reuse. Codification allows the transformation of tacit into explicit forms, like databases and manuals, hence enhancing accessibility and reducing knowledge loss[11], [14]. Knowledge codification can be described simply as writing down and storing essential knowledge so the organization can use it again in the future[15].

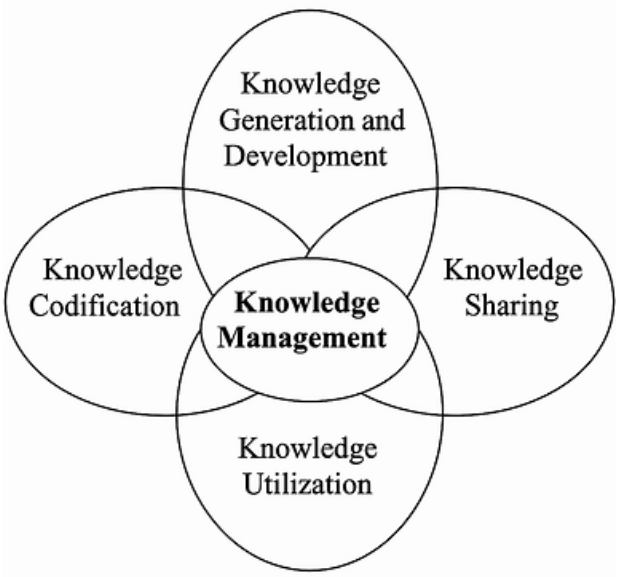


*Figure 1:Knoweldge management is the product of the all four dimensions, additionally the dimensions overlap together*

Knowledge Sharing is the third dimension of KM. The emphasis is on transferring knowledge among individuals and groups within or between organizations. Effective sharing mechanisms, whether via social networks or formal processes, are essential for disseminating both tacit and explicit knowledge and promoting collaboration [11], [16], [17] The final dimension, Knowledge Utilization, pertains to the implementation of knowledge for enhancing operations, addressing issues, and fostering innovation within the organization. Effective utilization of knowledge ensures that the organization leverages its knowledge assets, resulting in improved performance and sustainability [11], [12]. The four dimensions collectively establish a comprehensive framework for managing knowledge throughout its lifecycle within organizations.

The current study aimed to assess the impact of KM and organizational sustainability at the faculties of physical therapy in Egypt. Additionally, it aimed to assess the impact of all of the KM dimensions on organizational sustainability within the same faculties. It aimed to study the correlations among the dimensions of KM and with organizational sustainability. The hypotheses were as follows:

*$H_1$ = To what extent does KM have an impact on organizational sustainability at the faculties of physical therapy in Egypt?*
*$H_2$ = To what extent does Knowledge Generation and Development have an impact on organizational sustainability at the faculties of physical therapy in Egypt.*
*$H_3$ = To what extent does Knowledge Codification have an impact on organizational sustainability at the faculties of physical therapy in Egypt.*
*$H_4$ = To what extent does Knowledge Sharing have an impact on organizational sustainability at the faculties of physical therapy in Egypt.*
*$H_5$ = To what extent does Knowledge Utilization have an impact on organizational sustainability at the faculties of physical therapy in Egypt.*
*$H_6$ = Is there a relationship between KM dimensions and each other?*
*$H_7$ = Is there a relationship between KM dimensions and organizational sustainability at the physical therapy faculties in Egypt?*

## II. METHODOLOGY

### *A. Research Design and Ethical Considerations*

This study is a cross-sectional survey-based study using a questionnaire. The research was conducted according to the ethical guidelines for research that involves human subjects. Research ethical approval was secured from The Sinai University Research Ethics Committee (Approval Number: SU.REC.2025(56H)) and registered on OSF with Doi: 10.17605/OSF.IO/RVQBK

### *B. Research Setting and Population*

The study targets the population of the 41 active Faculties of Physical Therapy in Egypt during the 2024/2025 academic year. Respondents were drawn only from thirty-seven faculties of physical therapy across Egypt, representing a range of university types.

The population of interest in this study were all academic ranks in Egypt's Faculties of Physical Therapy: Teaching Assistants, Lecturers, Assistant Professors, and Professors.

### *C. Sample Size*

A sample size computation was conducted before to data collection to ensure statistically significant and generalizable results. The estimation was predicated on a 95% confidence interval and a 5% margin of error. Considering an estimated population proportion of 50% and a finite target population of approximately 1,000 eligible academics, the equation required a minimum of 278 participants. The final sample of 301 respondents satisfied this requirement.

### *D. Data Collection Instrument and Procedures*

The study was conducted through an electronic questionnaire using Google Forms. The questionnaire was adapted from research papers by Zaim et al.[18] and Demir et al.[19] Which was shown to be a valid and reliable tool. An acceptance to use the questionnaire was obtained from its authors.

The questionnaire consists of six sections, labeled A through F, as detailed next: Demographic Data, Knowledge Generation and Development, Knowledge Codification, Knowledge Sharing, Knowledge Utilization, and finally Organizational Sustainability.

Sections B through F of the questionnaire were designed to measure the study's five core constructs. A 7-point Likert was utilized for responses across all items. Participants expressed their degree of agreement with each statement based on their experiences inside their respective organizations where 1= Strongly Disagree, 2= Disagree, 3= Somewhat Disagree, 4 = Neutral, 5= Somewhat Agree, 6= Agree, and 7=Strongly Agree.

### *E. Data Analysis and Statistical Design*

The following statistical analyses were performed using SAS on demand for academics. First, descriptive Statistics for sample characteristics and responses to the Likert-scale items, including frequencies, percentages, means, standard deviations, medians, and quartiles. Multiple linear regression analysis was employed to investigate the predicted link between characteristics of KM and organizational sustainability. Finally, Pearson correlation analysis was used to investigate the correlation between KM dimensions and organizational sustainability.

## III. RESULTS

### *A. Descriptive Analysis*

#### *1) Descriptive Analysis for Categorical Variables*

The majority of faculties (73.0%, n = 27) were associated with private universities. National universities accounted for 8.1% (n = 3), whereas governmental universities accounted for 13.5% (n = 5). International universities were associated with a lower percentage of the physical therapy faculties (5.4%, n = 2).

The majority of the responders were affiliated with private universities (n = 210, 69.8%). Of the respondents (n = 77), 25.6% attended government universities, whereas 3.3% attended national universities (n = 10). The percentage of respondents affiliated with international

universities was lower (n = 4; 1.3%). From the 301 responders, one hundred and seventy-nine responders hold a PhD in physical therapy (59.5%), sixty-one responders hold an MSc. in physical therapy (20.3%), and the remaining sixty-one responders hold a BSc in physical therapy.

Nearly one-third (30.2%, n = 91) of the participants identified themselves as middle-level managers, while the majority (59.5%, n = 179) reported having no managerial position. Just 2.3% (n = 7) of respondents held the position of general director, and a smaller percentage (8.0%, n = 24) were directors.

Regarding the academic position, teaching assistants (demonstrators) comprised the largest group among the 301 participants, accounting for 33.6% (n = 101) of the sample. Teaching assistants (assistant lecturers) accounted for 20.3% (n = 61), while lecturers and assistant professors accounted for 31.6% (n = 95). Associate professors (6.6%, n = 20) and full professors (8.0%, n = 24) constituted a smaller proportion of respondents.

*2) Descriptive Analysis for Likert Scale Questions*

An anlysis was performed (Table 1), where Knowledge Utilization (Mean = 5.27, Median = 5.25) is the highest dimension, and Knowledge Codification (Mean = 4.75, Median = 4.63) is the lowest. IQR values indicate moderate spread, with Knowledge Sharing being the most consistent (IQR = 1.57)

TABLE 1: DESCRIPTIVE STATISTICS FOR LIKERT SCALE QUESTIONS BY KM AND SUSTAINABILITY DIMENSIONS (N = 301)

| Dimensions | Items | Mean ($\bar{X}$) | SD (±) | Median | IQR (Q1 – Q3) |
|---|---|---|---|---|---|
| **Knowledge Generation & Development** | 7 | 4.96 | 1.44 | 4.86 | 1.71 |
| **Knowledge Codification** | 8 | 4.75 | 1.50 | 4.63 | 2.00 |
| **Knowledge Sharing** | 8 | 5.19 | 1.10 | 5.00 | 1.57 |
| **Knowledge Utilization** | 8 | 5.27 | 1.26 | 5.25 | 1.75 |
| **Organizational Sustainability** | 9 | 4.95 | 1.51 | 4.89 | 2.00 |

*B. Regression Analysis*

The ability of KM dimensions to predict organizational sustainability was investigated using a multiple linear regression. The model accounted for 75.3% of the overall variance in sustainability. ($R^2 = 0.753$, adjusted $R^2 = 0.750$, $F = 224.8$, $p < 0.001$). The strongest predictors were knowledge utilization (% of $R^2 = 7.2\%$, $p < 0.001$) and knowledge codification (% of $R^2 = 5.6\%$, $p < 0.001$), with knowledge generation & development also making a positive contribution (% of $R^2 = 4.4\%$, $p < 0.001$). Sustainability was not significantly predicted by knowledge sharing, with only one negatively worded item reverse-coded (% of $R^2 = 0.4\%$, $p = 0.069$). High shared variance (0.621, 82.5% of $R^2$) indicates substantial overlap among KM dimensions in predicting sustainability, with only 17.5% of explained variance uniquely attributable to individual dimensions. These findings demonstrate the importance of applying and organizing knowledge to improve sustainability across physical therapy faculties (Table 2, Fig.2).

TABLE 2: REGRESSION COEFFICIENTS TABLE

| Predictor | B (SE) | β | t | p | $\Delta R^2$ | % of $R^2$ |
|---|---|---|---|---|---|---|
| **Constant** | -0.034 (0.196) | — | -0.17 | .865 | — | — |
| **Knowledge Generation & Development** | 0.275 (0.041) | 0.281 | 6.71 | < .001 | 0.033 | 4.4 % |
| **Knowledge Codification** | 0.402 (0.052) | 0.367 | 7.73 | < .001 | 0.042 | 5.6 % |
| **Knowledge Sharing*** | -0.124 (0.068) | -0.091 | -1.82 | .069 | 0.003 | 0.4 % |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Knowledge Utilization** | 0.445 (0.049) | 0.402 | 9.08 | < .001 | 0.054 | 7.2 % |

[a] The only statement that was reverse-coded (recoded) was "We don't have effective knowledge sharing in the organization".

Where the regression equation is *Organizational Sustainability = − 0.034 + 0.275 ( KM Generation ) + 0.402 (KM Codification ) − 0.124 (KM Sharing ) + 0.445 (KM Utilization)*

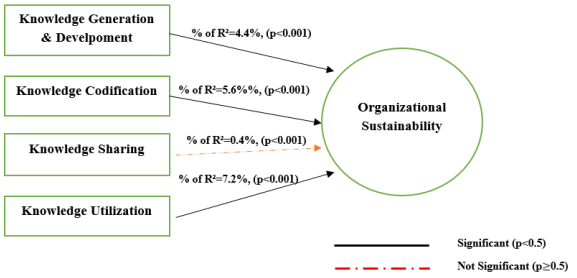


*Fig. 1: The Path Model of KM Dimensions Predicting Sustainability*

*C. Correlation Analysis Between KM dimensions and Organizational Sustainability*

A Pearson correlation analysis was conducted to examine the relationships between organizational sustainability and the characteristics of KM. At the p <.001 level, all correlations were statistically significant (p <.001 level), referring to a strong relationship between all dimensions. The results showed a positive correlation across the four KM dimensions (r = 0.798-0.846). The knowledge sharing and knowledge utilization dimensions showed the strongest correlation (r = 0.846) across the entire matrix (Fig. 3).

There was a strong and positive correlation (r = 0.697 to r = 0.757) between organizational sustainability and all KM dimensions. Knowledge utilization and organizational sustainability had the strongest correlation (r = 0.757) among all dimensions.

| | Knowledge Generation | Knowledge Codification | Knowledge Sharing | Knowledge Utilization | Organizational Sustainability |
|---|---|---|---|---|---|
| Knowledge Generation | 1 | | | | |
| Knowledge Codification | 0.837 | 1 | | | |
| Knowledge Sharing | 0.798 | 0.815 | 1 | | |
| Knowledge Utilization | 0.823 | 0.831 | 0.846 | 1 | |
| Organizational Sustainability | 0.709 | 0.745 | 0.697 | 0.757 | 1 |

*Figure 2: Correlation heatmap illustrating Pearson Correlation Heatmap of KM Dimensions and Organizational Sustainability*

## IV. Discussion

The results found that knowledge generation & development made a positively contributed to organizational sustainability within the Egyptian faculties of physical therapy.

A study of universities in Kurdistan, Iraq, confirms the outcomes of the current research. It revealed that knowledge generation and development are the most significant predictors of organizational sustainability within higher education institutions, compared to other KM dimensions. The authors also discovered that knowledge generation & development positively influence other aspects of KM. This means that universities should actively generate new knowledge to enhance their sustainability[15]. This evidence strengthens our argument that knowledge generation and development are fundamental drivers for organizational sustainability.

Another study clearly shows that knowledge development is a key factor and a predictor of organizational sustainability, supporting our results. The authors claim that "effective KM is crucial for the success and sustainability of campus management," recognizing knowledge creation as "one of the key factors" in KM. They declared that creating knowledge fosters a culture in which people "actively seek out and share information." This starts a cycle of knowledge generation and sharing that "can benefit the whole organization" by encouraging learning and working collaboratively[20].

Raudeliūnienė and Matar showed that KM technologies enhance the efficacy of sustainable higher education institutions by facilitating processes such as knowledge generation, sharing, and utilization. An institution that can continually generate new knowledge can adapt more quickly, develop new approaches to teaching and governance, and address social and environmental

challenges, all of which are important for sustainability[21]. This means that technology alone doesn't make things sustainable. Instead, it's the ongoing generation of knowledge that these tools make possible to determine whether the organization will be able to achieve and maintain sustainable performance over time. Using Ajmal et al.'s model of higher education performance, knowledge generation was shown to be a simple, direct predictor of organization survival. In their research on public universities, knowledge generation and development serve as a core dimension that transforms an institution's absorptive capacity, which is the capability to acquire and comprehend new knowledge, into better organizational performance[22].

The current study showed that knowledge codification was one of the two strongest predictors of organizational sustainability among physical therapy faculties. A study supported the current results showed that knowledge codification is strongly and positively related to internal organizational efficiency and to key knowledge processes (resources, design, application) in universities. In private universities in Kenya, knowledge codification occurs through these knowledge resources, their design, and their application to enhance institutional effectiveness. This means that it is the initial phase in a chain that leads to better performance of the organization. To remain competitive over time, universities need to be efficient and effective and reduce costs [23]. A good knowledge codification strategy that stores and shares reusable knowledge helps them survive in the long term and can be used to predict organizational sustainability.

Another study conducted at Polytechnique University of Leiria found that Knowledge codification through repositories and IP systems is a core element of long-term success, supporting the idea that it predicts organizational sustainability. Polytechnique University of Leiria builds a durable knowledge base that supports ongoing collaboration, external partnerships, and innovation, which are the key dimensions of organizational sustainability[24].

Knowledge codification processes encompass activities such as capturing, storing, and organizing knowledge for reuse throughout the university, resulting in enhanced KM processes that substantially improve organizational (university) performance. Since sustaining high performance over time is a key part of achieving organizational sustainability, this supports up the idea that knowledge codification makes the organization more sustainable[25].

The Kenyan higher education study supports our results and showed that when universities follow a strong knowledge codification strategy as systematically documenting and organizing knowledge and using technology to store it, this results in increasing their internal effectiveness. Internal effectiveness includes better use of resources, smoother processes, and more reliable performance, which are all key elements of organizational sustainability. The study concludes that improved knowledge codification enhances internal effectiveness and is as a crucial catalyst for lasting competitive advantage in higher education institutions [15].

The findings indicate that knowledge sharing does not serve as a predictor for organizational sustainability. In alignment with our findings, Shafait and Huang (2024) indicated that knowledge sharing is not invariably the principal mechanism influencing sustainability-related outcomes. A study of sustainable leadership in Chinese universities found that sustainability had a substantial direct effect on professors' learning outcomes. On the contrary, knowledge sharing did not mediate this relationship[26]. Their findings support our view that knowledge sharing suggests that knowledge sharing by itself may not always be a significant predictor of organizational sustainability outcomes.

On the contrary, our study results were rejected by several studies that showed that knowledge sharing was a predictor of organizational sustainability within the higher education institutions.

Al-Rahmi & Alkhalaf found out that Knowledge sharing positively influences innovation, big data adoption, and education sustainability (79.2% of the variance) making knowledge sharing a strong positive predictor to organizational sustainability[27].

Saragih and Hermanto, who examined the determinants of knowledge sharing and their impact on organizational sustainability in Indonesian private universities, demonstrated that knowledge sharing positively and significantly influences sustainable organizational performance [28].

Another paper positioned knowledge sharing not only as a mechanism for individual learning, but as a predictor and driver of organizational sustainability in universities operating within a knowledge-based, sustainability-

oriented economy[29], which also rejects our result findings.

This study showed that knowledge utilization could strongly predict organizational sustainability within the Egyptian faculties of physical therapy. The study's results, which revealed that knowledge utilization was a strong predictor of organizational sustainability, were supported by numerous studies in the higher education sector. Research on private and public universities in Kurdistan, Iraq, found that knowledge utilization, especially when combined with staff training, such as workshops, significantly enhances the sustainability of higher education institutions by improving the application of KM processes [15].

A recent study in Kuwait's service sector corroborates our findings. It demonstrated that efficient knowledge utilization is tightly linked to, and contributes to, organizational sustainability and enduring competitive advantage[12].

A study of colleges and universities in the United States supports our results. It was discovered that knowledge utilization significantly enhanced organizational performance, in conjunction with knowledge acquisition[30]. This evidence reinforces the idea that successfully using knowledge is an essential component of long-term organizational achievement and supports the strong predictive role of knowledge utilization in achieving sustainable outcomes within the organizations.

The study showed a strong, positive correlation between all KM dimensions and organizational sustainability among the faculties of physical therapy in Egypt. This means that implementing effective KM strategies within higher education institutions can lead to sustainability within the organizations.

The results were supported by Demir et al. They found a strong and positive association within KM dimensions and organizational sustainability while investigating private orgnazitionss in the Kurdistan - Iraq[31].

The study by Kavalić et al. offers supportive evidence for our results. They proved that effective KM is a prerequisite for sustainable, competitive performance within any organization[32].

Another study showed a significant positively effect of the KM process on sustainable competitive advantage (SCA) in higher education institutions. This supports the current results, which show that more developed KM processes directly improve universities' ability to sustain their position over time[33].

Raudeliuniene and Matar studied the Lebanese and Syrian higher education. They demonstrated that strengthening KM practices is a powerful lever for institutional sustainability in higher education, showing positively significant relationship within KM dimensions and organizational sustainability[34].

The current study was limited to several factors. First, there were no official records of the number of academic staff across all faculties, and we had to rely on personal contacts to obtain the figure. Secondly, the response rate to official emails was very low, so we had to rely on personal connections and social media again to achieve the required sample size. Additionally, the fact that many academic staff in the faculties of physical therapy are affiliated with more than one university made it difficult to reach them, and it was therefore decided to select only one university for their response. Finally, many staff members are already working abroad and were consequently excluded from the survey, despite being listed on the records of the Egyptian organizations.

## V. CONCLUSION & RECOMMENDATIONS

This study concluded that KM dimensions: generation, codification, and utilization are predictors of organizational sustainability within the faculties of physical therapy in Egypt. Additionally, it found that all KM dimensions had a strong positive correlation with organizational sustainability.

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